Please amend the following claims:

1. (Original) A method of finishing a tracked semiconductor wafer having a semiconductor wafer surface and a finishing cycle time, the method comprising the steps of:

providing the tracked semiconductor wafer having tracked information;

providing a finishing surface;

providing a finishing aid to an interface formed between the finishing surface and the semiconductor wafer surface;

providing a finishing control subsystem having:

at least three operative process sensors for sensing in situ process information during the finishing cycle time;

access to the tracked information; and

a processor to evaluate the in situ process information and the tracked information;

applying an operative finishing motion in the interface forming at least one region having the finishing aid and wherein the at least one region has a tangential force of friction; and

changing a plurality of control parameters in response to an evaluation of both the in situ process information sensed with the at least three operative process sensors and the tracked information and wherein changing the control parameters changes the tangential force of friction in the at least one region having the finishing aid during at least a portion of the finishing cycle time.

2. (Original) The method of finishing according to claim 1 wherein the finishing aid comprises a reactive finishing aid which chemically reacts with at least a portion of the semiconductor wafer surface changing the finishing rate in angstroms per minute when compared to the finishing rate under identical finishing conditions but in the absence of the reactive finishing aid.

3. (Original) The method of finishing according to claim 2 wherein the semiconductor wafer has at least 3 metal layers.

4. (Original) A processor-readable, program storage device encoded with instructions that, when executed by a processor, performs the method of claim 3.

5. (Original) The method of finishing according to claim 1 wherein:

the finishing aid comprises the finishing aid which at least in part reduces friction; and

the semiconductor wafer comprises a semiconductor wafer having at least three metal layers.

6. (Original) The method of finishing according to claim 1 wherein the finishing aid comprises a finishing aid having a property selected from the group consisting of changing the coefficient of friction, changing average cut rate, and changing the cut rate of a specific material in the semiconductor wafer surface.

7. (Original) The method of finishing according to claim 1 wherein the finishing aid comprises a finishing aid comprising an organic lubricant

8. (Original) The method of finishing according to claim 1 wherein the finishing aid comprises an organic lubricating film which adheres to the semiconductor wafer surface.

9. (Original) The method of finishing according to claim 1 wherein the finishing aid comprises an organic lubricating film which interacts with and adheres to the semiconductor wafer surface.

10. (Original) The method of finishing according to claim 1 wherein:

the semiconductor wafer has at least one uniform region on the semiconductor wafer surface; and

the finishing aid comprises an organic lubricating film which interacts with the uniform region of the semiconductor wafer surface.

11. (Original) The method of finishing according to claim 1 wherein:

the semiconductor wafer has at least one uniform region on the semiconductor wafer surface; and

the finishing aid comprises an organic lubricating film which interacts with and adheres to the uniform region of the semiconductor wafer surface.

12. (Original) A method of finishing a tracked semiconductor wafer having a semiconductor wafer surface and a finishing cycle time, the method comprising the steps of:

providing the tracked semiconductor wafer having tracked information;

providing a finishing surface;

providing a finishing aid to an interface formed between the finishing surface and the semiconductor wafer surface;

providing a finishing control subsystem having:

at least three operative process sensors for sensing in situ process information during the finishing cycle time;

access to the tracked information; and

a processor to evaluate the in situ process information and the tracked information;

applying an operative finishing motion in the interface formed between the finishing surface and the semiconductor wafer surface forming at least one region having the finishing aid which reacts with the semiconductor wafer surface and wherein the at least one region has a tangential force of friction; and

changing a plurality of control parameters in response to an evaluation of both the in situ process information sensed with the at least three operative process sensors and the tracked information and wherein changing the control parameters changes the tangential force of friction in the at least one region having the finishing aid which reacts with the semiconductor wafer surface during at least a portion of the finishing cycle time.

13. (Original) The method of finishing according to claim 12 wherein the finishing aid comprises the finishing aid selected from the group consisting of a lubricating aid and a chemically reactive aid.

14. (Original) The method of finishing according to claim 13 wherein the semiconductor wafer has at least 3 metal layers.

15. (Original) A processor-readable, program storage device encoded with instructions that, when executed by a processor, performs the method of claim 14.

16. (Original) A process controller at least in part controlled by a processor having access to a processor readable medium with processor readable instructions for performing the method of claim 14.

17. (Original) The method of finishing according to claim 14 wherein:

the finishing aid comprises the finishing aid which at least in part reduces friction; and

the semiconductor wafer comprises a semiconductor wafer having at least three metal layers.

18. (Original) The method of finishing according to claim 17 wherein the semiconductor wafer has at least 3 metal layers.

19. (Currently amended) A method for finishing a semiconductor wafer having tracked information, the method comprising:

a step (A) providing a semiconductor wafer having a heterogeneous semiconductor wafer surface comprising at least a first uniform region and a second uniform region;

a step (B) providing a finishing surface;

a step (C) providing a finishing aid proximate the semiconductor wafer;

a step (D) providing at least one finishing control subsystem having at least three operative process sensors, at least one processor, and a controller and wherein the at least one processor for processing:

(i) the tracked information, and

(ii) historical performance including a quantity of historical performance of prior semiconductor wafers;

a step (E) applying an operative finishing motion to an interface between the heterogeneous semiconductor wafer surface and the finishing surface and wherein the interface includes at least one uniform region having the finishing aid;

a step (F) sensing an in situ finishing information with the at least three operative process sensors during a finishing cycle time;

a step (G) evaluating a multiplicity of finishing information, and each having varying effects on the finishing with the finishing aid;

a step (H) determining a change for at least two process control ~~parameter~~ parameters using:

(i) the tracked information,

(ii) the historical performance including the quantity of historical performance of prior semiconductor wafers,

(iii) the in situ finishing information, and

(iv) the step (G) of evaluating the multiplicity of finishing information; and

a step (I) changing the at least two ~~of~~ control parameters changes the tangential force of friction in the at least one uniform region having the finishing aid during at least a portion of the finishing cycle time.

20. (Original) The method of finishing according to claim 19 wherein the finishing aid comprises a reactive finishing aid which chemically reacts with at least a portion of the semiconductor wafer surface changing the finishing rate in angstroms per minute when compared to the finishing rate under identical finishing conditions but in the absence of the reactive finishing aid.

21. (Original) The method of finishing according to claim 19 wherein the finishing aid comprises the finishing aid selected from the group consisting of a lubricating aid and a chemically reactive aid.

22. (Original) The method of finishing according to claim 21 wherein the semiconductor wafer has at least 3 metal layers.

23. (Original) The method of finishing according to claim 22 wherein the step (H) of determining a change comprises using a mathematical expression.

24. (Original) The method of finishing according to claim 22 wherein the step (H) of determining a change comprises using neural networks.

25. (Original) A processor-readable, program storage device encoded with instructions that, when executed by a processor, performs the method of claim 22.

26. (Original) A process controller at least in part controlled by a processor having access to a processor readable medium with processor readable instructions for performing the method of claim 22.

27. (Original) The method of finishing according to claim 19 wherein the finishing surface comprises the finishing surface of a finishing element and the finishing element includes the finishing aid.

28. (Original) The method of finishing according to claim 19 wherein:
the finishing aid comprises the finishing aid which at least in part reduces friction; and
the semiconductor wafer has at least three metal layers.

29. (Currently amended) The method of finishing according to claim 19 wherein the finishing aid comprises a finishing aid having a property selected from the group consisting of changing the coefficient of friction, changing average cut rate, and changing the cut rate of a specific material in the semiconductor wafer surface.

30. (Original) The method of finishing according to claim 19 wherein the finishing aid comprises an organic lubricant

31. (Original) The method of finishing according to claim 19 wherein the finishing aid comprises an organic lubricating film which adheres to the semiconductor wafer surface.

32. (Original) The method of finishing according to claim 19 wherein the finishing aid comprises an organic lubricating film which interacts with and adheres to the semiconductor wafer surface.

33. (Original) The method of finishing according to claim 19 wherein the finishing aid comprises an organic lubricating film which interacts with the first uniform region.

34. (Original) The method of finishing according to claim 33 wherein the semiconductor wafer comprises a semiconductor wafer having a diameter of at least 300 millimeters.

35. (Original) The method of finishing according to claim 19 wherein the finishing aid comprises an organic lubricating film which interacts with and adheres to the first uniform region.

36. (Original) The method of finishing according to claim 35 wherein the semiconductor wafer comprises the semiconductor wafer having a diameter of at least 300 millimeters.

37. (Original) A method of finishing a tracked semiconductor wafer having a semiconductor wafer surface and a finishing cycle time, the method comprising the steps of:

providing the tracked semiconductor wafer having tracked information;

providing a finishing surface;

providing a finishing aid to an interface formed between the finishing surface and the semiconductor wafer surface having a first uniform region and a second uniform region;

providing a finishing control subsystem having:

at least three operative process sensors for sensing in situ process information during the finishing cycle time;

access to the tracked information; and

a processor to evaluate the in situ process information and the tracked information;

applying an operative finishing motion in the interface forming a first uniform region having the finishing aid and wherein the first and the second uniform regions have different finishing rates measured in angstroms per minute; and

changing a plurality of control parameters in response to an evaluation of both the in situ process information sensed with the at least three operative process sensors and the tracked information and wherein changing the control parameters changes the a finishing rate measured in angstroms per minute in at least one uniform region during at least a portion of the finishing cycle time.

38. (Original) The method of finishing according to claim 37 wherein the finishing aid comprises a reactive finishing aid which chemically reacts with at least a portion of the semiconductor wafer surface changing the finishing rate in angstroms per minute when compared to the finishing rate under identical finishing conditions but in the absence of the reactive finishing aid.

39. (Original) The method of finishing according to claim 38 wherein the evaluation comprises using an algorithm and memory look-up tables to evaluate the in situ process information and the tracked information.

40. (Original) The method of finishing according to claim 37 wherein the finishing aid comprises the finishing aid selected from the group consisting of a lubricating aid and a chemically reactive aid.

41. (Original) The method of finishing according to claim 40 wherein the evaluation comprises using an algorithm and memory look-up tables to evaluate the in situ process information and the tracked information.

42. (Original) The method of finishing according to claim 40 wherein the evaluation comprises using a neural network and memory look-up tables to evaluate the in situ process information and the tracked information.

43. (Original) The method of finishing according to claim 37 wherein the evaluation comprises using an algorithm, a model, a historical performance including a quantity of tracked historical performance, and memory look-up tables to evaluate the in situ process information and the tracked information.

44. (Original) A processor-readable, program storage device encoded with instructions that, when executed by a processor, performs the method of claim 43.

45. (Original) The method of finishing according to claim 37 wherein the semiconductor wafer has a diameter of at least 300 millimeters.

46. (Original) The method of finishing according to claim 37 wherein the finishing aid comprises the finishing aid which at least in part reduces friction.

47. (Original) The method of finishing according to claim 37 wherein:
the finishing aid comprises the finishing aid which at least in part reduces friction; and
the semiconductor wafer has at least three metal layers.

48. (Currently amended) The method of finishing according to claim 37 wherein the finishing aid comprises a finishing aid having a property selected from the group consisting of changing the coefficient of friction, changing average cut rate, and changing the cut rate of a specific material in the semiconductor wafer surface.

49. (Original) The method of finishing according to claim 37 wherein the finishing aid comprises an organic lubricant

50. (Original) The method of finishing according to claim 37 wherein the finishing aid comprises an organic lubricating film which adheres to the semiconductor wafer surface.

51. (Original) The method of finishing according to claim 37 wherein the finishing aid comprises an organic lubricating film which interacts with and adheres to the semiconductor wafer surface.

52. (Original) The method of finishing according to claim 37 wherein the finishing aid comprises an organic lubricating film which interacts with the first uniform region.

53. (Original) The method of finishing according to claim 52 wherein the semiconductor wafer has a diameter of at least 300 millimeters.

54. (Original) The method of finishing according to claim 37 wherein the finishing aid comprises an organic lubricating film which interacts with and adheres to the first uniform region.

55. (Original) The method of finishing according to claim 52 wherein the semiconductor wafer has a diameter of at least 300 millimeters.

56. (Original) A method of finishing a tracked semiconductor wafer having a semiconductor wafer surface and a finishing cycle time, the method comprising the steps of:

providing the tracked semiconductor wafer having tracked information;

providing a finishing surface;

providing a finishing aid to an interface formed between the finishing surface and the semiconductor wafer surface;

providing a finishing control subsystem having:

at least three operative process sensors for sensing in situ process information during the finishing cycle time;

access to the tracked information; and

a processor to evaluate the in situ process information and the tracked information;

applying an operative finishing motion in a finishing interface having a first region and a second region and wherein at least the first uniform region has a finishing aid and wherein the first and the second regions have different finishing rates measured in angstroms per minute;

evaluating both the in situ process information sensed with the at least three operative process sensors and the tracked information; and

changing a plurality of control parameters to change the finishing rate measured in angstroms per minute in at least one of the regions during the finishing cycle time.

57. (Original) The method of finishing according to claim 56 wherein:

changing the plurality of control parameters comprises using an algorithm to evaluate the in situ process information having a multiplicity of data and the tracked information having a multiplicity of data types; and wherein

the plurality of control parameters are changed at least ten times during the finishing cycle time.

58. (Original) The method of finishing according to claim 57 wherein the semiconductor wafer has a diameter of at least 300 millimeters.

59. (Original) A method of finishing a tracked semiconductor wafer having a semiconductor wafer surface and a finishing cycle time, the method comprising the steps of:

providing the tracked semiconductor wafer having tracked information;

providing a finishing surface;

providing a finishing aid to an interface formed between the finishing surface and the semiconductor wafer surface;

providing a finishing control subsystem having:

at least five operative process sensors for sensing in situ process information during the finishing cycle time;

access to the tracked information; and

a processor to evaluate the in situ process information and the tracked information;

applying an finishing motion in the interface forming at least one uniform region having the finishing aid and a differential finishing rate measured in angstroms per minute on the semiconductor wafer surface;

evaluating both the in situ process information sensed with the at least five operative process sensors and the tracked information; and

changing a plurality of control parameters to change the differential finishing rate measured in angstroms per minute on the semiconductor wafer surface during the finishing cycle time.

60. (Original) A process controller at least in part controlled by a processor having a processor readable medium with processor readable instructions for performing the method of claim 59.

61. (Currently amended) A method for finishing a semiconductor wafer having at least one uniform region and having tracked information, the method comprising:

a step (A) providing a semiconductor wafer;

a step (B) providing a finishing surface;

a step (C) providing a finishing aid proximate the semiconductor wafer and wherein the finishing aid comprises a reactive finishing aid which reacts with at least portion of the semiconductor wafer surface changing the finishing rate in angstroms per minute when compared to the finishing rate under identical finishing conditions but in the absence of the reactive finishing aid;

a step (D) providing at least one finishing control subsystem having at least three operative process sensors, at least one processor, and a controller and wherein the at least one processor for processing:

(i) tracked information, and

(ii) historical performance;

a step (E) applying an operative finishing motion to an interface between the semiconductor wafer and the finishing surface and wherein the interface includes the finishing aid;

a step (F) sensing an in situ finishing information with the at least three operative process sensors during a finishing cycle time;

a step (G) evaluating a multiplicity of finishing information, and each having varying effects on the finishing with the finishing aid;

a step (H) determining a change for at least two process control ~~parameter~~ parameters using:

(i) tracked information,

(ii) historical performance,

(iii) the in situ finishing information, and

(iv) the step (G) of evaluating the multiplicity of finishing information; and

a step (I) changing the at least two control parameters changes the finishing rate measured in angstroms per minute in the at least portion of the semiconductor wafer during the finishing cycle time.

62. (Original) The method of finishing according to claim 61 wherein the reactive finishing aid comprises the reactive finishing aid selected from the group consisting of a lubricating aid and a chemically reactive aid.

63. (Original) The method according to claim 62 wherein the tracked information comprises individually tracked information belonging to the semiconductor wafer.

64. (Original) The method according to claim 62 wherein the tracked information comprises a batch tracked information belonging to a batch of semiconductor wafers and including the semiconductor wafer.

65. (Original) The method according to claim 62 wherein the tracked information comprises an individually tracked information belonging to the semiconductor wafer and the batch of tracked information belonging to a batch of semiconductor wafers including the semiconductor wafer.

66. (Original) A process controller having access to a manufactured article having a processor readable medium with processor readable instructions for performing the methods of claim 65.

67. (Original) An apparatus for planarizing a workpiece having a process controller, the process controller having access to a manufactured article having a computer readable medium with computer readable instructions for performing the method of claim 65.

68. (Original) A processor-readable, program storage device encoded with instructions that, when executed by a processor, performs the method of claim 65.

69. (Currently amended) ~~A~~ The method according to claim 61 comprising further steps:

a step (J) storing at a least a portion of the information in the step (H) forming a family of stored information;

a step (K) using the family of stored information to determine a change for at least one particular member of the family of stored information; and

a step (L) changing the at least one particular member of the family of stored information.

70. (Currently amended) ~~A~~ The method according to claim 61 comprising further steps:

a step (J) storing at a least a portion of the information in the step (H) forming a family of stored information;

a step (K) using the family of stored information to determine a change for at least one particular member of the family of stored information;

a step (L) changing the at least one particular member in the family of stored information forming a changed family of stored information; and

a step (M) using the changed family of stored information.

71. (Original) A process controller having access to a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 70.

72. (Original) A processor-readable, program storage device encoded with instructions that, when executed by a processor, performs the method of claim 70.

73. (Currently amended) ~~A~~ The method according to claim 61 comprising further steps:

a step (J) storing at a least a portion of the information in the step (H) forming a family of stored information;

a step (K) using the family of stored information to determine a change for at least one particular member of the family of stored information with data mining;

a step (L) changing the at least one particular member in the family of stored information forming a changed family of stored information; and

a step (M) using the changed family of stored information.

74. (Original) The method of finishing according to claim 73 wherein the finishing aid comprises the finishing aid which at least in part reduces friction.

75. (Currently amended) ~~A~~ The method according to claim ~~61~~ 74 comprising further steps:

a step (J) storing at a least a portion of the information in the step (H) forming a family of stored information;

a step (K) using the family of stored information to determine a change for at least one particular member of the family of stored information with data mining;

a step (L) changing the at least one particular member in the family of stored information forming a changed family of stored information; and

a step (M) using the changed family of stored information.

76. (Currently amended) A method for finishing a semiconductor wafer having tracked information, the method comprising:

a step (A) providing a semiconductor wafer;

a step (B) providing a finishing surface;

a step (C) providing a finishing aid proximate the semiconductor wafer and wherein the finishing aid differentially reacts with heterogeneous regions of a semiconductor wafer surface being finished;

a step (D) providing at least one finishing control subsystem having at least three operative process sensors, at least one processor, and a controller and wherein the at least one processor for processing:

(i) the tracked information, and

(ii) historical performance including a quantity of historical performance of prior semiconductor wafers;

a step (E) applying an operative finishing motion to an interface between the semiconductor wafer and the finishing surface and wherein the interface includes the finishing aid;

a step (F) sensing an in situ finishing information with the at least three operative process sensors during a finishing cycle time;

a step (G) evaluating a multiplicity <u>of</u> finishing information, and each having varying effects on the finishing with the finishing aid;

a step (H) determining a change for at least two process control ~~parameter~~ <u>parameters</u> using:

(i) the tracked information,

(ii) the historical performance including the quantity of historical performance of prior semiconductor wafers,

(iii) the in situ finishing information, and

(iv) the step (G) of evaluating the multiplicity of finishing information; and

a step (I) changing the at least two ~~of~~ control parameters to change a finishing rate measured in angstroms per minute on at least one region of semiconductor wafer surface during the finishing cycle time.

77. (Original) The method of finishing according to claim 76 wherein the finishing aid comprises the finishing aid selected from the group consisting of a lubricating aid and a chemically reactive aid.

78. (Original) The method of finishing according to claim 76 wherein the finishing aid comprises a reactive finishing aid which chemically reacts with at least a portion of the semiconductor wafer surface changing the finishing rate in angstroms per minute when compared to the finishing rate under identical finishing conditions but in the absence of the reactive finishing aid.

79. (Original) The method according to claim 76 wherein the multiplicity of finishing information includes at least in part finishing rate information measured in angstroms per minute.

80. (Original) The method according to claim 76 wherein the multiplicity of finishing information includes at least in part surface defect information on the semiconductor wafer.

81. (Original) The method according to claim 76 wherein the multiplicity of finishing information includes at least in part both finishing rate information measured in angstroms per minute and surface defect information on the semiconductor wafer.

82. (Currently amended) ~~A~~ The method according to claim 76 comprising further steps:
a step (J) storing at a least a portion of the information in the step (H) forming a family of stored information;
a step (K) using the family of stored information to determine a change for at least one particular member of the family of stored information; and
a step (L) changing the at least one particular member of the family of stored information.

83. (Original) A process controller having access to a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 82.

84. (Currently amended) ~~A~~ The method according to claim 76 comprising further steps:
a step (J) storing at a least a portion of the information in the step (H) forming a family of stored information;

a step (K) using the family of stored information to determine a change for at least one particular member of the family of stored information;

a step (L) changing the at least one particular member in the family of stored information forming a changed family of stored information; and

a step (M) using the changed family of stored information.

85. (Currently amended) ~~A~~ The method according to claim 84 wherein the ~~step~~ steps (G) and (H) are performed at least in part during the same time.

86. (Currently amended) ~~A~~ The method according to claim 84 wherein the ~~step~~ steps (G) and (H) are performed at least in part at different times.

87. (Original) A process controller having access to a manufactured article having a processor readable medium with processor readable instructions for performing the method of claim 84.

88. (Original) A processor-readable, program storage device encoded with instructions that, when executed by a processor, performs the method of claim 84.

89. (Currently amended) ~~A~~ The method according to claim 76 comprising further steps:

a step (J) of storing at a least a portion of the information in the step (H) forming a family of stored information;

a step (K) of using the family of stored information to determine a change for at least one particular member of the family of stored information with data mining;

a step (L) of changing the at least one particular member in the family of stored information forming a changed family of stored information; and

a step (M) of using the changed family of stored information.

90. (Original) The method of finishing according to claim 89 wherein the finishing aid comprises the finishing aid which at least in part reduces friction.

91. (Currently amended) ~~A~~ The method according to claim ~~76~~ 90 comprising further steps:

a step (J) of storing at a least a portion of the information in the step (H) forming a family of stored information;

a step (K) of using the family of stored information to determine a change for at least one particular member of the family of stored information;

a step (L) of changing the at least one particular member in the family of stored information forming a changed family of stored information; and

a step (M) of using the changed family of stored information.

92. (Original) The method of finishing according to claim 91 wherein the finishing surface comprises a wear inducing finishing surface.

93. (Original) The method of finishing according to claim 91 wherein the finishing surface comprises a wear inducing finishing surface for inducing tribochemical reactions.

94. (Original) The method of finishing according to claim 91 wherein the finishing surface comprises a multiphase polymeric finishing surface having at least two synthetic polymers.

95. (Original) The method of finishing according to claim 91 wherein the finishing aid comprises at least in part a plurality of organic lubricating films and wherein the differential finishing rate comprises at least in part differential lubrication.

96. (Original) The method of finishing according to claim 91 wherein the finishing surface comprises the finishing surface of a finishing element and the finishing element includes the finishing aid.

97. (Currently amended) A method for finishing a semiconductor wafer having tracked information, the method comprising:

a step (A) providing a semiconductor wafer and wherein the semiconductor wafer surface has a first uniform region and a second uniform region;

a step (B) providing a finishing surface;

a step (C) providing a finishing aid proximate the semiconductor wafer;

a step (D) providing at least one finishing control subsystem having at least three operative process sensors, at least one processor, and a controller and wherein the at least one processor for processing:

(i) the tracked information, and

(ii) historical performance including a quantity of historical tracked information of the workpiece and a quantity of historical tracked information of prior workpieces;

a step (E) applying an operative finishing motion to an interface between the semiconductor wafer and the finishing surface and wherein the interface includes the finishing aid in the first uniform region;

a step (F) sensing an in situ finishing information with the at least three operative process sensors during a finishing cycle time;

a step (G) evaluating a multiplicity of finishing information, and each having varying effects on the finishing with the finishing aid;

a step (H) determining a change for at least two process control ~~parameter~~ parameters using:

(i) the tracked information,

(ii) historical performance including the quantity of historical tracked information of the workpiece and the quantity of historical tracked information of prior workpieces,

(iii) the in situ finishing information, and

(iv) the step (G) of evaluating the multiplicity of finishing information; and

a step (I) changing the at least two ~~of~~ control parameters to change a finishing rate measured in angstroms per minute on at least the first uniform region of semiconductor wafer surface during the finishing cycle time;

a step (J) storing at a least a portion of the information in the step (H) forming a family of stored information;

a step (K) using the family of stored information to determine a change for at least one particular member of the family of stored information;

a step (L) changing the at least one particular member in the family of stored information forming a changed family of stored information; and

a step (M) using the changed family of stored information.

98. (Original) The method of finishing according to claim 97 wherein the semiconductor wafer has a diameter of at least 300 millimeters.

99. (Original) The method of finishing according to claim 97 wherein the finishing aid comprises a reactive finishing aid which chemically reacts with at least a portion of the semiconductor

wafer surface changing the finishing rate in angstroms per minute when compared to the finishing rate under identical finishing conditions but in the absence of the reactive finishing aid.

100. (Original) The method of finishing according to claim 97 wherein:
the finishing aid comprises the finishing aid which at least in part reduces friction; and
the semiconductor wafer has at least three metal layers.

101. (Currently amended) The method of finishing according to claim 97 wherein the finishing aid comprises a finishing aid having a property selected from the group consisting of changing the coefficient of friction, changing average cut rate, and changing the cut rate of a specific material in the semiconductor wafer surface.

102. (Original) The method of finishing according to claim 97 wherein the finishing aid comprises an organic lubricant

103. (Original) The method of finishing according to claim 97 wherein the finishing aid comprises an organic lubricating film which adheres to the semiconductor wafer surface.

104. (Original) The method of finishing according to claim 97 wherein the finishing aid comprises an organic lubricating film which interacts with and adheres to the semiconductor wafer surface.

105. (Original) The method of finishing according to claim 97 wherein the finishing aid comprises an organic lubricating film which interacts with the first uniform region.

106. (Original) The method of finishing according to claim 97 wherein the finishing aid comprises an organic lubricating film which interacts with and adheres to the first uniform region.

107. (Original) The method of finishing according to claim 97 wherein the finishing aid comprises at least in part a plurality of organic lubricating films and wherein the differential finishing rate comprises at least in part differential lubrication.

108. (Original) The method of finishing according to claim 97 wherein the finishing surface comprises the finishing surface of a finishing element and the finishing element includes the finishing aid.

109. (Original) The method of finishing according to claim 97 wherein the finishing surface comprises a wear inducing finishing surface.

110. (Original) The method of finishing according to claim 97 wherein the finishing surface comprises a wear inducing finishing surface for inducing tribochemical reactions.

111. (Original) The method of finishing according to claim 97 wherein the finishing surface comprises a multiphase polymeric finishing surface having at least two synthetic polymers.

112. (Original) The method of finishing according to claim 97 wherein the finishing aid comprises the finishing aid which differentially reacts with heterogeneous regions of a semiconductor wafer surface.

113. (Original) The method of finishing according to claim 97 wherein the finishing aid comprises the finishing aid which differentially reacts with heterogeneous regions of a semiconductor wafer surface forming a differential lubrication.

114. (Original) A processor-readable, program storage device encoded with instructions that, when executed by a processor, performs the method of claim 97.

115. (Original) A process controller having access to a manufactured article having a processor readable medium with processor readable instructions for performing the methods of claim 97.

116. (Original) At least three process controllers according to claim 115 wherein the at least three process controllers are in operative communication with each other.

117. (Original) An apparatus for planarizing a workpiece having a process controller, the process controller having access to a manufactured article having a computer readable medium with computer readable instructions for performing the method of claim 97.

118. (Original) At least three apparatus for planarizing a workpiece according to claim 117 wherein the at least three process controllers are in operative communication with each other.

119. (Currently amended) A method for finishing a semiconductor wafer having tracked information, the method comprising:

a step (A) providing a semiconductor wafer and wherein the semiconductor wafer surface has a first uniform region and a second uniform region;

a step (B) providing a finishing surface;

a step (C) providing a finishing aid proximate the semiconductor wafer;

a step (D) providing at least one finishing control subsystem having at least three operative process sensors, at least one processor, and a controller and wherein the at least one processor for processing:

(i) the tracked information, and

(ii) historical performance including a quantity of historical tracked information of the workpiece and a quantity of historical tracked information of prior workpieces;

a step (E) applying an operative finishing motion to an interface between the semiconductor wafer and the finishing surface and wherein the interface includes the finishing aid in the first uniform region;

a step (F) sensing an in situ finishing information with the at least three operative process sensors during a finishing cycle time;

a step (G) evaluating a multiplicity <u>of</u> finishing information, and each having varying effects on the finishing with the finishing aid;

a step (H) determining a change for at least two process control ~~parameter~~ <u>parameters</u> using:

(i) the tracked information,

(ii) historical performance including the quantity of historical tracked information of the workpiece and the quantity of historical tracked information of prior workpieces;

(iii) the in situ finishing information, and

(iv) the step (G) of evaluating the multiplicity of finishing information; and

a step (I) changing the at least two ~~of~~ control parameters to change a tangential force of friction in at least the first uniform region of semiconductor wafer surface during the finishing cycle time;

a step (J) storing at a least a portion of the information in the step (H) forming a family of stored information;

a step (K) using the family of stored information to determine a change for at least one particular member of the family of stored information;

a step (L) changing the at least one particular member in the family of stored information forming a changed family of stored information; and

a step (M) using the changed family of stored information.

120. (Original) The method of finishing according to claim 119 wherein the finishing aid comprises a reactive finishing aid which chemically reacts with at least a portion of the semiconductor wafer surface changing the finishing rate in angstroms per minute when compared to the finishing rate under identical finishing conditions but in the absence of the reactive finishing aid.

121. (Original) The method of finishing according to claim 119 wherein:

the finishing aid comprises the finishing aid which at least in part reduces friction; and

the semiconductor wafer has at least three metal layers.

122. (Currently amended) The method of finishing according to claim 119 wherein the finishing aid comprises a finishing aid having a property selected from the group consisting of changing the coefficient of friction, changing average cut rate, and changing the cut rate of a specific material in the semiconductor wafer surface.

123. (Original) The method of finishing according to claim 119 wherein the finishing aid comprises an organic lubricant

124. (Original) The method of finishing according to claim 119 wherein the finishing aid comprises an organic lubricating film which adheres to the semiconductor wafer surface.

125. (Original) The method of finishing according to claim 119 wherein the finishing aid comprises an organic lubricating film which interacts with and adheres to the semiconductor wafer surface.

126. (Original) The method of finishing according to claim 119 wherein the finishing aid comprises an organic lubricating film which interacts with the first uniform region.

127. (Original) The method of finishing according to claim 119 wherein the finishing aid comprises an organic lubricating film which interacts with and adheres to the first uniform region.

128. (Original) The method of finishing according to claim 119 wherein the finishing aid comprises at least in part a plurality of organic lubricating films and wherein the differential finishing rate comprises at least in part differential lubrication.

129. (Original) The method of finishing according to claim 119 wherein the finishing surface comprises the finishing surface of a finishing element and the finishing element includes the finishing aid.

130. (Original) The method of finishing according to claim 119 wherein the finishing surface comprises a wear inducing finishing surface.

131. (Original) The method of finishing according to claim 119 wherein the finishing surface comprises a wear inducing finishing surface for inducing tribochemical reactions.

132. (Original) The method of finishing according to claim 119 wherein the finishing surface comprises a multiphase polymeric finishing surface having at least two synthetic polymers.

133. (Original) The method of finishing according to claim 119 wherein the finishing aid comprises the finishing aid which differentially reacts with heterogeneous regions of a semiconductor wafer surface.

134. (Original) The method of finishing according to claim 119 wherein the finishing aid comprises the finishing aid which differentially reacts with heterogeneous regions of a semiconductor wafer surface forming a differential lubrication.

135. (Original) A processor-readable, program storage device encoded with instructions that, when executed by a processor, performs the method of claim 119.

136. (Original) A process controller having access to a manufactured article having a processor readable medium with processor readable instructions for performing the methods of claim 119.

137. (Original) At least three process controllers according to claim 136 wherein the at least three process controllers are in operative communication with each other.

138. (Original) An apparatus for planarizing a workpiece having a process controller, the process controller having access to a manufactured article having a computer readable medium with computer readable instructions for performing the method of claim 119.

139. (Original) At least three apparatus for planarizing a workpiece according to claim 138 wherein the at least three process controllers are in operative communication with each other.